

DTIC FILE COPY

ARI Research Note 90-133

①

Cohesion Research: Conceptual and Methodological Issues

AD-A228 030

Laurel W. Oliver

U.S. Army Research Institute

Office of Basic Research
Michael Kaplan, Director

DTIC
ELECTE
OCT 25 1990
S B D

September 1990



**United States Army
Research Institute for the Behavioral and Social Sciences**

Approved for public release; distribution is unlimited.

90 10 23 166

U.S. ARMY RESEARCH INSTITUTE FOR THE BEHAVIORAL AND SOCIAL SCIENCES

**A Field Operating Agency Under the Jurisdiction
of the Deputy Chief of Staff for Personnel**

EDGAR M. JOHNSON
Technical Director

JON W. BLADES
COL, IN
Commanding

Technical review by

Michael Drillings
William W. Haythorn

NOTICES

DISTRIBUTION: This report has been cleared for release to the Defense Technical Information Center (DTIC) to comply with regulatory requirements. It has been given no primary distribution other than to DTIC and will be available only through DTIC or the National Technical Information Service (NTIS).

FINAL DISPOSITION: This report may be destroyed when it is no longer needed. Please do not return it to the U.S. Army Research Institute for the Behavioral and Social Sciences.

NOTE: The views, opinions, and findings in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy, or decision, unless so designated by other authorized documents.

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1a. REPORT SECURITY CLASSIFICATION Unclassified			1b. RESTRICTIVE MARKINGS --	
2a. SECURITY CLASSIFICATION AUTHORITY --			3. DISTRIBUTION / AVAILABILITY OF REPORT Approved for public release; distribution is unlimited.	
2b. DECLASSIFICATION / DOWNGRADING SCHEDULE --				
4. PERFORMING ORGANIZATION REPORT NUMBER(S) ARI Research Note 90-133			5. MONITORING ORGANIZATION REPORT NUMBER(S) --	
6a. NAME OF PERFORMING ORGANIZATION U.S. Army Research Institute		6b. OFFICE SYMBOL (If applicable) --	7a. NAME OF MONITORING ORGANIZATION U.S. Army Research Institute	
6c. ADDRESS (City, State, and ZIP Code) 5001 Eisenhower Avenue Alexandria, VA 22333-5600			7b. ADDRESS (City, State, and ZIP Code) 5001 Eisenhower Avenue Alexandria, VA 22333-5600	
8a. NAME OF FUNDING / SPONSORING ORGANIZATION U.S. Army Research Institute for the Behavioral and Social Sciences		8b. OFFICE SYMBOL (If applicable) PERI-BR	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER --	
8c. ADDRESS (City, State, and ZIP Code) 5001 Eisenhower Avenue Alexandria, VA 22333-5600			10. SOURCE OF FUNDING NUMBERS	
			PROGRAM ELEMENT NO. 61102B	PROJECT NO. 74F
			TASK NO. N/A	WORK UNIT ACCESSION NO. N/A
11. TITLE (Include Security Classification) Cohesion Research: Conceptual and Methodological Issues				
12. PERSONAL AUTHOR(S) Oliver, Laurel W.				
13a. TYPE OF REPORT Final		13b. TIME COVERED FROM 86/01 TO 87/12		14. DATE OF REPORT (Year, Month, Day) 1990, September
15. PAGE COUNT 27				
16. SUPPLEMENTARY NOTATION This report was written as part of an Intra-Laboratory Individual Research (ILIR) project.				
17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)	
FIELD	GROUP	SUB-GROUP	Group cohesion Social psychology	
			Cohesion measurement Forecasting	
			Database	
19. ABSTRACT (Continue on reverse if necessary and identify by block number) A quantitative integration of the cohesion-performance research involving real world groups (Oliver, 1987) revealed a number of issues that made the interpretation of that research problematic. This paper discusses some of these conceptual and methodological issues and offers recommendations based on the issues. Recommendations call for a consensus on a definition of cohesion as well as on a differentiation of cohesion from other constructs and establishment of a database of cohesion instruments. Specific suggestions are given for developing psychometrically sound cohesion measures. Also strongly urged is the identification of related variables and the delineation of their interrelationships, particularly the cohesion-performance relationships. Guidelines are presented for reporting of research results.				
20. DISTRIBUTION / AVAILABILITY OF ABSTRACT <input checked="" type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS			21. ABSTRACT SECURITY CLASSIFICATION Unclassified	
22a. NAME OF RESPONSIBLE INDIVIDUAL Laurel W. Oliver			22b. TELEPHONE (Include Area Code) (202) 274-8722	22c. OFFICE SYMBOL PERI-BR

FOREWORD

Over the past several years, group cohesion has become increasingly important to the Army. Increased interest in the topic has led to additional research in the area. A part of the recent research effort involved a quantitative integration of the cohesion-performance research that employed real world groups and contained empirical data. This report discusses a number of issues encountered in the process of integrating that subset of cohesion-performance literature. The recommendations contain guidelines for improving the quality of cohesion research and provide guidance for those seeking to implement research findings.

Accession For	
NTIS GRA&I	<input checked="checked" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By _____	
Distribution/ _____	
Availability Codes	
Dist	Avail and/or Special
A-1	

COHESION RESEARCH: CONCEPTUAL AND METHODOLOGICAL ISSUES

EXECUTIVE SUMMARY

Requirement:

The phenomenon of group cohesion is of great interest to the Army as it is viewed as a group characteristic that is, to a large extent, under the control of leaders and also positively linked to unit performance. Over the years, there have been a number of research efforts that investigated the relationship of cohesion and performance in real world groups--e.g., industrial work groups, military units, and sports teams. A recent attempt to integrate this subset of the cohesion research using a quantitative approach (Oliver, 1977) revealed a number of problems. Guidance is needed both for those conducting such research in the future and for those seeking to apply the results of the cohesion research. This report reviews a number of issues related to cohesion research in real world groups and presents recommendations that emerge from a consideration of the issues.

Procedure:

The cohesion-performance research reviewed for a quantitative integration of the literature was examined to determine the areas that made the interpretation of the results of the research problematic. The author identified conceptual and methodological problems and developed recommendations to resolve the problems.

Findings:

Cohesion researchers have not agreed on a definition of cohesion, nor have they clearly delineated it from related constructs. Construct validity, always difficult to demonstrate for abstract concepts, has not been established. Inspection of the research revealed a number of methodological shortcomings, some of which concerned instrument development. Others related to research design and analysis. Severe deficiencies in research reporting were also encountered. Recommendations called for a consensus on a definition of cohesion and its differentiation from related constructs. Establishing a database of cohesion instruments was also recommended. Specific suggestions were given for developing psychometrically sound measures of cohesion. Also strongly urged was the identification of related variables--antecedent, concomitant, and consequent--and the delineation of

the relationships among cohesion and other variables. Considered of particular importance was an understanding of the cohesion-performance relationship. Guidelines were presented for the complete reporting of research results.

Utilization of Findings:

The recommendations contained in this report provide researchers with guidelines for improving the quality of cohesion research. The recommendations also provide guidance to those seeking to implement research findings.

COHESION RESEARCH: CONCEPTUAL AND METHODOLOGICAL ISSUES

CONTENTS

	Page
INTRODUCTION	1
Background.	1
Problem	1
Purpose of Paper.	2
CONCEPTUAL ISSUES.	2
Definitions of Cohesion	2
Confusion of Cohesion with Related Constructs	5
Identification of Antecedents, Concomitants, and Consequences	7
METHODOLOGICAL ISSUES.	8
Difficulty of Establishing Construct Validity	8
Lack of Methodological Rigor in Development of Cohesion Measures	9
Problems in Research Design and Analysis.	9
Deficiencies in Research Reporting.	11
RECOMMENDATIONS.	12
CONCLUDING REMARKS	15
REFERENCES	17

Cohesion Research: Conceptual and Methodological Issues

INTRODUCTION

Background

During the past few years, the phenomenon of group cohesion has played an increasingly important role in the Army's view of leadership and mission accomplishment. The concern about cohesion and its presumed contribution to military readiness has led to more research attention to the phenomenon. Cohesion, or "group cohesiveness," as it has generally been called in the social-psychological literature, has been the focus of considerable research. Most of this research comprised laboratory studies with subjects formed into groups for the purpose of the investigation. Some of the cohesion research, however, involved real world groups--e.g., military units, industrial work groups, and sports teams.

Problem

As Bednar and Kaul (1978) noted almost a decade ago, "there is little cohesion in the cohesion research" (p. 800). Although the rather sizable research literature on cohesion has been summarized and reviewed from time to time (e.g., Bass, 1981; Cartwright, 1968; Hare, 1976; Ivancevich, Szilagyi, & Wallace, 1977; Lott & Lott, 1965), no quantitative research integration of the literature had been accomplished. Using a meta-analytic approach, Oliver (1987a) recently completed an attempt to integrate that subset of the cohesion literature which utilized real world groups.¹ In the process of conducting this research integration effort, the author encountered a number of issues which made interpretation of the cohesion research problematic.

¹It should be noted that in the recent past additional research effort has been expended in the area of military cohesion. Very little of this work was available to the author during the accumulation of research reports for the meta-analysis. The findings of this paper are based on the studies available at that time. Subsequent work by Siebold (1987, April; 1987, August) has attempted to address some of the issues discussed in this report. See also recent papers by Griffith (1986, August; 1987, August; undated), who has discussed conceptual and measurement problems in the cohesion research, and the background paper on military cohesion by Devilbiss (1987).

Purpose of Paper

Accordingly, this paper will identify some of the issues that emerged from the meta-analysis and which should be addressed in efforts to construct or identify cohesion measures and to use those measures for cohesion research involving real world groups. These issues include several conceptual and methodological problems, almost all of which have been previously discussed somewhere in the literature. An additional purpose of the paper is to make some specific recommendations that result from a consideration of the issues discussed.

CONCEPTUAL ISSUES

Definitions of Cohesion

The conceptual issues which emerge from a review of the cohesion literature relate to definitional problems--definitions of cohesion and related constructs and to their interrelationships. One of the major difficulties encountered in the cohesion research lies in the many ways in which the construct of "cohesion" or "group cohesiveness" has been defined. The traditional definitions originated in the social-psychological research on small groups. The definitions of military cohesion, which tend to be related to Etzioni's (1975) conceptualization of the concept, differ somewhat from the traditional definitions.

In his book written over three decades ago, Seashore (1954) contrasted the two principal lines of inquiry in cohesion research. One of those research directions involved small groups and their processes. The other type of research involved industrial work groups and emphasized morale and productivity.

Small group cohesiveness. In the social-psychological research tradition, Festinger's (1950) definition of cohesiveness has perhaps been the most frequently quoted: "the resultant of all the forces acting upon the members to remain in the group" (p. 274). Thus, attractiveness of the group to the members tends to be the core of many definitions of this construct. Lott and Lott (1965) refer in the title of their literature review to cohesiveness as interpersonal attraction and go on to define the construct as "that group property which is inferred from the number and strength of mutual positive attitudes among the members of a group" (p. 259). Bass (1981) noted Shaw's three definitions of group cohesion: member attraction to group, level of group morale, and coordination attitudes among group members (p. 424). Bass (1981) also cited Stogdill's definition of cohesion as members' reinforcement of each others' expectations of the value of maintaining group identity (p. 424). Ivancevich, Szilagyi, and Wallace (1977) defined cohesiveness as an

"atmosphere of closeness, or common attitudes, behavior, and performance" (p. 216). Deutsch (1968) asserted that it was "intuitively clear that cohesiveness refers to the forces which bind the parts of a group together and which thus resist disruptive influences" (p. 467). The English and English (1958) dictionary of psychological and psychoanalytical terms gives four definitions for "cohesion/group cohesiveness": the overall attraction a group has for its members, the total field of external and internal forces which tend to keep the group intact, the feeling of belongingness on the part of the group members, and group morale (p. 94). More recently, Piper, Marrache, Lacroix, Richardsen, and Jones (1983) have defined cohesion as "a basic bond or uniting force" (p. 95). These authors suggested that several bonds may exist in a group: between members, between a member and a leader, and between a member and "his conception of the group as a whole" (Piper et al., 1983, p. 95).

Work group cohesion. Some of the cohesion research has involved work groups. Price and Mueller (1986) have defined work group cohesion as the "extent to which employees have close friends in their immediate work units" (p. 250)--a conceptualization that equates to interpersonal attraction and is very similar to the Lott and Lott (1965) definition quoted above. Although most of the research on work group cohesion involved industrial settings (e.g., Seashore, 1954), Blau's (1963) work took place in a bureaucratic setting. Much of the work group cohesion research was accomplished some years ago and employed sociometric measures of cohesion.

Sports team cohesion. Carron (1982) and Carron and Chelladurai (1982) have investigated the role of cohesion in the functioning of sports teams. Carron (1982) has asserted that there are two predominant sets of processes operating in work groups: processes related to the development of social relationships and processes related to the achievement of group goals. Along this line, Mikalachki (1969) has suggested cohesion comprises the two components of task cohesion and social cohesion.

Etzioni's definition of cohesion. In his book on complex organizations, Etzioni (1975) has defined cohesion as "a positive expressive relationship among two or more actors" (p. 280). He has specifically stated that this definition does not imply shared goals or values, which he equates to "consensus or normative integration," because to use the term in the broader sense converts the "definition" to a "proposition." That is, incorporating shared goals and values into the definition makes the assumption that cohesion and the shared goals are positively correlated and "change in an associated way." Etzioni (1975) referred to "peer cohesion whenever the bond links actors of the same rank" and to "hierarchical cohesion when the bond links

actors of a different rank" (p. 281). I quote Etzioni's own words liberally here since there has been some confusion about his definition of cohesion. Hedlund and Yoest (1984), for example, have attributed a third facet of cohesion, "personal integration" (congruence of individual and organizational goals) to Etzioni. Etzioni (1975), however, has been quite clear that his definition does not include shared values or goals because he believes that defining cohesion as involving both "social integration or solidarity and ... consensus or normative integration blurs a valuable distinction" (p. 280).

Military cohesion. For some authors, "military cohesion" differs from the construct of "cohesion" or "cohesiveness" discussed above. In a report documenting the conclusions of the Action Planning Group on Cohesiveness, military cohesiveness was defined as "the result of forces acting on soldiers that attract and bind them together producing commitment to other unit members and the unit as a whole to accomplish unit missions" (Day, Jacobs, Clement, & Johns, 1979, p. 13). Griffith and Chopper (1986) have offered a definition of military unit cohesion which has three aspects: horizontal cohesion, vertical cohesion, and commitment. Another definition to be noted is the one contained in the Dictionary of United States Army Terms (Department of the Army, 1986). This document defines "unit cohesion" as the "result of controlled, interactive forces that lead to solidarity within military units, directing the soldiers toward common goals with an express commitment to one another and to the unit as a whole" (p. 174).

Some recent work concerning military cohesion also addresses the definitional issue. Siebold and Kelly (1987, May) have defined cohesion in terms of three types of bonding--horizontal, vertical, and organizational. These authors have further differentiated each kind of bonding into affective and instrumental subtypes. In an examination of the potential of cohesion as a technique to enhance human performance in the Army, Druckman and Swets (1988) have defined several pertinent terms: "Group cohesion refers to the member's relation to his or her immediate (small) unit. Organizational commitment refers to the member's relation to the larger organization, which includes his or her own as well as other units. Cohesion refers to the member's relation to both the immediate unit (peers and leaders) and the larger organization of which the immediate unit is a part" (Druckman & Swets, 1988, p. 151).

Summary of construct definitions. The definitions of cohesion presented above do not constitute an exhaustive list, but they are representative. The notion of forces acting on group members to remain in the group is a common theme, as is the equating of cohesion with interpersonal attraction. The dimensions of peer and hierarchical cohesion are incorporated

into several definitions (e.g., Etzioni, 1975; Piper et al., 1983). In addition to horizontal bonding and vertical bonding, Piper et al. (1983) included bonding to the group as a whole in their conceptualization of cohesion. Although some authors (e.g., Ivancevich et al., 1977) include communalities of attitudes and behaviors as part of the cohesion definition, Etzioni (1975) has specifically excluded the "consensus" aspect of shared goals or values from his definition. The definitions of military cohesion, on the other hand, include commitment and/or shared goals as an integral part of the construct definition (e.g., Devilbiss, 1987). The definition found in the Dictionary of United States Army Terms differs from all the other definitions of cohesion in that it defines the concept by a prescription of the means to effect the phenomenon ("controlled, interactive forces") although it does not define what those forces are. Mikalachki's (1969) notion that work group cohesion comprises the two components of social cohesion and task cohesion brings a slightly different, but related, perspective to the conceptualization of cohesion.

Author's view. It is the opinion of the author that Etzioni's (1975) conceptualization of peer and hierarchical cohesion encompasses a variety of concepts such as "forces acting on group members," "interpersonal attraction," "mutual positive attitudes," "group identity," and the like. However, it has been noted (e.g., Dess & Origer, 1987; Hackman, 1976) that while members of highly cohesive groups may have strong allegiance to values and goals, these may or may not correspond to the values and goals of the organization. If this congruence is lacking, cohesion can be dysfunctional for the organization. One can view the congruence of personal and organizational goals as a moderator variable which affects group performance differentially depending upon the degree to which such congruence exists. It seems more parsimonious to this author to restrict the definition of group cohesion to horizontal and vertical cohesion (and, perhaps, to the group as a whole) and to deal with commitment to organizational goals as a moderator variable. One can argue, of course, that a conceptualization involving only peer and hierarchical cohesion merely defines group cohesion and not specifically military or military unit cohesion.

Confusion of Cohesion with Related Constructs

As indicated above, the conceptualization of cohesion has a confused history. While the various definitions generally incorporate some notion of group stick-togetherness, it is not clear how these definitions relate to other, similar constructs. Examples of some related constructs are morale, esprit de corps, motivation, commitment, solidarity, climate, and culture. There is surprisingly little discussion in the literature concerning the extent to which the cohesion construct includes, coincides with, is contained within, or overlaps related constructs. It

can be argued that some of these constructs are essentially the same thing. In discussing the characteristics of research on groups, Zander (1979) noted that synonyms often exist for group phenomena such as a member's desire to remain in a group. He observed, "Researchers in group life are remarkably inventive in creating new names for phenomena that already have a name" (Zander, 1979, p. 424).

Although these various constructs have similarities, they may also have unique connotations. Morale, for example, implies a confident and courageous perseverance in the work of the group, particularly under stressful conditions. Esprit de corps has traditionally meant an enthusiastic spirit of loyalty to a group (originally, a military one), especially with regard to the honor and interests of that group as opposed to others. The term motivation implies goal-directed behavior. In organizations, leaders are supposed to "motivate" their subordinates--presumably toward accomplishing the goals of the organization. Commitment has the connotation of being obligated or bound to something, be it people (peers or leaders) or ideals (group values or norms). Commitment was defined by Price and Mueller (1986) as "loyalty to the organization" (p. 70). And so on.

Some authors have attempted to clarify the relationships among cohesion and related constructs and to indicate how the various constructs have been addressed in the research literature. Hare (1976) maintained that morale and cohesiveness have been used interchangeably. Motowidlo and Borman (1978) have viewed cohesion, along with satisfaction and motivation, as elements of morale. Climate surveys may include cohesion scales in their instruments (e.g., the peer cohesion scale of Moos, 1986). Griffith and Chopper (1986) incorporated commitment as an element of their definition of cohesion (along with horizontal and vertical bonding). Although Etzioni (1975) has equated cohesion with solidarity (see quotations in preceding section), Biau (1963) has viewed solidarity as a broader concept than cohesion. Thus there is no consensus among authorities on how cohesion relates to a variety of other similar constructs.

Even though the various constructs seem to have slightly different connotations, operationally they are generally indistinguishable from cohesion. The esprit de corps measure of Bauer, Stout, and Holz (1977), for example, consists of peer bonding items which are highly similar to those identified as a "cohesion-cooperation" factor emerging from the factor analysis reported by Olson and Borman (1987).

Climate and culture are broader in scope than are constructs such as cohesion and morale. Schneider and Reichers (1983) have held that work settings can have a variety of climates. Thus there can be a climate for safety, a climate for innovation, a

climate for achievement, or any combination of these and other climates. In military settings, one could speak of a "command climate" or a "climate for mission accomplishment." Thus it is probable that cohesion might be a necessary, if not a sufficient, condition, for mission accomplishment--i.e., to fight and win even under adverse or deteriorating circumstances.

Although Schneider (1985) noted that climate and culture have often been used interchangeably, he differentiated the two. Most people mean "social climate" (interpersonal practices) when they refer to climate. But Schneider (1985) has asserted that climate research also includes the "formal and informal policies and procedures that reward [and] support....safety...innovation" and the like (p. 595). Culture research, on the other hand, would involve investigations of organizational norms and value systems that underlie the policies and procedures that lead to a specific climate (Schein, 1985). Research methodologies also differ for these two approaches. Culture research tends to be qualitative in nature, often using a case study approach, while climate research typically employs survey methodology.

Identification of Antecedents, Concomitants, and Consequences

In addition to the related constructs discussed above, there are a host of other variables which are scattered throughout the literature on the cohesion of real world groups. Researchers have postulated a relationship between cohesion and such variables as leadership style (Blades, 1986), job satisfaction (Downey, Duffy, & Shiflett, 1975), performance (Goodacre, 1951), turnover (Goodacre, 1953), self-esteem (Keller, 1987), reenlistment (Moos, 1986), demographic factors (Nelson & Berry, 1968), subordinate role clarity (Schriesheim, 1980), and group size (Keller, 1987).

Although many such variables have been investigated, there have been only a few (sometimes only one or two) studies on each variable. Thus the findings have not been definitive. It is difficult to determine which of these variables are antecedents, concomitants, or consequences of cohesion. With respect to causality, some authors have suggested a reciprocal relationship may be involved between cohesion and other variables such as performance (e.g., Cartwright, 1968; Deutsch, 1968; Oliver, 1987a). There is also some empirical evidence (Bakeman & Helmreich, 1975) that high performance may lead to higher levels of cohesion, rather than the reverse. In any event, the interrelationships among cohesion and these other variables have not been established.

METHODOLOGICAL ISSUES

In actuality, a discussion of the conceptual issues concerning cohesion research cannot be neatly separated from a consideration of the methodological issues encountered in the research. The definition of a construct directly affects the construction of measures of that construct. Hence conceptualization and operationalization are two intertwined aspects of research on psychological constructs. The section which follows begins with a discussion of construct validity and its role in cohesion research and then proceeds to the consideration of several specific methodological problems.

Difficulty of Establishing Construct Validity

The difficulty of validating a psychological variable is related to its degree of abstractness. In fact, Nunnally (1978) has said that the degree to which "it is necessary and difficult to validate measures of psychological variables is proportional to the degree to which the variable is concrete or abstract" (p. 95). Thus, reaction time is relatively easy to measure in ways scientists can agree upon, while variables such as intelligence or cohesion pose a much more difficult measurement problem.

Nunnally (1978) has defined a construct as an abstract rather than a concrete variable. Thus constructs such as "cohesion" cannot be observed directly. Instead, one must infer the presence of the construct by observing responses to items on a questionnaire ("A high degree of cooperation exists among members of my work group") or observing overt behaviors that one has postulated are manifestations of the construct ("Members of the squad did not leave the area after returning from the field until everyone's equipment was cleaned and put away").

After an instrument has been constructed, one needs to determine whether it does in fact measure what it is supposed to measure. The literature indicates that construct validity is the most logical type of validity to establish for a measure of cohesion. Other types of validity are more appropriate for other purposes (Nunnally, 1978).²

²Researchers who wish to use a "cohesion" measure as a predictor of, say, performance are of course not dealing with construct validity. Demonstrating that increasing a group's mean cohesion score by a given number of points is associated with an increase of so many units in group performance establishes the predictive validity of the measure but not its construct validity. The measure may be predictive, but evidence that it is a measure of cohesion is not conclusively demonstrated.

As Nunnally (1978) has pointed out, construct validation is a much more complex procedure than are other types of validation. Establishing construct validity requires much careful thought, considerable imagination, and multiple attempts. Psychometric procedures such as factor analysis and Campbell and Fiske's (1959) multitrait-multimethod matrix procedure can be employed to help establish construct validity. Newer techniques, such as structural equation modeling (Bentler, 1980) might also have applications in such validation efforts.

The author wishes to make the point here that establishing the validity of constructs is no trivial task. The difficulties of construct validation are probably to blame for the fact that such validation has been imperfectly accomplished in much research, including cohesion research.

Lack of Methodological Rigor in Development of Cohesion Measures

The conceptual confusion surrounding the definition of cohesion and related constructs complicates the construction of cohesion measures. Some authors do not even attempt to define cohesion. Those researchers who do define cohesion do so differently and operationalize it in a variety of ways, and their descriptions of the operationalization process are often lacking. Research reports on the construction of cohesion questionnaires, for example, typically contain inadequate information on the development of the item pool. Those researchers who do indicate the sources of items usually do not specify clearly which items came from which source and how the items were changed.

Good research procedure requires that instruments be pilot tested after items have been selected. Although such pilot testing is occasionally reported, authors rarely specify in any detail the problems encountered and the steps taken to overcome the difficulties. And while there have been some exceptions (e.g., Griffith & Chopper, 1986; Moos, 1986), most cohesion researchers have not reported reliability and validity data.

Another type of information that would be helpful to users of survey measures is the reading difficulty of the instrument. Given the literacy problems sometimes encountered among blue collar workers and military personnel, it would seem important for researchers to ascertain how understandable the measure is to the population for which it is designed.

Problems in Research Design and Analysis

Aggregation of individual responses. Cohesion research presents an interesting paradox. Cohesion is presumably a group characteristic, yet it is almost always measured by summing or averaging individual responses. Not only that, but the criterion measures are also often based on individual data. (An exception

is the number of games won/lost by sports teams.) Although some authors (e.g., Griffith & Chopper, 1986; Nieva, Fleishman, Rieck, & Strasel, 1985) have drawn attention to the incongruity of aggregating individual responses to obtain measures of group characteristics, the issue has not received much attention to date. Clearly, two groups could have the same mean on a cohesion measure yet differ greatly from each other if one group has a very small dispersion around the mean and the scores of the other group are characterized by a large variance.

Level of analysis. Aggregation poses a serious problem in social science research when one considers the level of analysis issue. It is important for researchers to consider carefully the level of analysis they are investigating and why. Since one can obtain disparate results from the same measure aggregated at two different levels, it is essential that the rationale for collecting data at a given level is clear and defensible. As just noted, in cohesion research the level of analysis problem is further complicated by the fact that individual level data are often used to assess a group phenomenon.

In a discussion of the etiology of climates, Schneider and Reichers (1983) have commented on the aggregation problem. They asked how, when aggregating employee responses to questions about policies and procedures, the researcher can decide which group of employees should be chosen to represent a social unit. The answer to this question was that it depends "upon the uses to which the data will be put and the way in which the survey items are worded" (Schneider & Reichers, 1983, p. 24). If, for example, a researcher is investigating the climate for supportive supervision across work groups, the appropriate unit of analysis would be the work group.

Criterion problem. The criterion problem has, of course, bedeviled psychologists and others for many decades. In the context of cohesion research, one of the principal difficulties lies in the measurement of performance. The recent report by the Committee on Techniques for Enhancing Human Performance (Druckman & Swets, 1988) has emphasized the need to establish an empirical link between cohesion and performance. A search of the cohesion-performance literature (Oliver, 1987a) resulted in only a handful of studies suitable for quantitative integration. Although a number of cohesion studies were rejected because of inadequate research reporting, others could not be used because they did not examine measures of performance or organizational effectiveness.

The aggregation problem mentioned above in relation to the measurement of cohesion also occurs in conjunction with criterion measures. Cohesion is a group phenomenon. Thus, it can be argued, a criterion for cohesion should be a performance measure of the group as an entity. As mentioned previously, the number of games won/lost by a team would be such a measure. Another

example would be a group's score on a military field training exercise. Nieva et al. (1985) pointed out that "Much effort has been devoted to conceptualizing and operationalizing the various factors that affect group performance, without a parallel level of effort devoted to understanding the basic question, what is group performance" (p. 48). These authors also noted that "group performance" in the literature has sometimes been merely individual performance in a group setting.

Deficiencies in Research Reporting

Many research integrators have discovered that the data reported by researchers in their reports and articles are frequently incomplete. A number of authors have commented on this problem of inadequate reporting (e.g., Green & Hall, 1984; Jackson, 1980; Orwin & Cordray, 1985). Light and Pillemer (1984) asserted that the inadequacy of research reporting is "surprising" and that some might wish to "change the word surprising to shocking" (p. 101). After encountering significant difficulties in integrating the career counseling outcome literature, Oliver and Spokane (1983) described the problem of inadequate research reporting and suggested guidelines for such reporting. In the recent past, editors have begun to acknowledge the problem and to require that authors include in their manuscripts all data needed for meta-analytic research reviews (e.g., Beyer, 1985).

Thus it was not unexpected to discover that the cohesion research literature also contained examples of inadequate research reporting. Missing data constitute a severe problem for the research integrator. Although one might expect every researcher to report means, standard deviations, correlation coefficients, and *ns*, such is not the case. Incomplete descriptions of samples, interventions, and measures pose problems both for research integrators and for those seeking to apply the findings of a study or group of studies.

In the area of cohesion research, there are few standardized instruments such as exist for other constructs such as intelligence or career maturity. Cohesion researchers often do not describe their instruments well.³ This lack of information can be due to the fact that the researcher has not carefully thought out what it is he or she wishes to measure and has not gone about constructing the instrument in a systematic fashion. Frequently there are no reliability and validity data to report.

Deficiencies of reporting in the cohesion literature pose a problem not only for research integrators but also for

³The Military Environment Inventory developed by Moos (1986) is an exception.

researchers who wish to build upon previous work as well as those who wish to apply cohesion findings in their own situations. Thus reporting deficiencies in the literature impair both the development of new knowledge and the application of what has already been discovered.

RECOMENDATIONS

As Piper et al. (1983) have stated, "Despite its heralded importance, cohesion is a concept with significant problems" (p. 94). The preceding discussion of the conceptual and methodological issues associated with cohesion research on real world groups described some of those problems. The intent of this section is to offer recommendations which stem from the discussion of those issues. If these recommendations were to be followed, the author believes cohesion research could lead to enhanced functioning of real world groups.

Recommendation No. 1: Define Cohesion in Specific Multidimensional Terms. There is a certain amount of agreement (see Carron, 1982) that the cohesion construct is a multidimensional one. Hence the interpersonal attraction definition of the earlier small group research (e.g., Lott & Lott, 1965) may be too limited for applications in real world groups who are working together on meaningful tasks. Etzioni's (1975) notion of peer and hierarchical cohesion has a logical appeal and has also been operationalized in several instruments (e.g., Griffith and Chopper, 1986, and Moos, 1986). Researchers might also want to consider the possibility of examining both social cohesion and task cohesion as suggested by Mikilachki (1969). As noted earlier in this paper, definitions of military cohesion have generally included an organizational commitment/goals congruence component. Hence a decision must be made about whether to include such an element as part of the definition or whether to incorporate it into the research design as a moderator variable. In this author's opinion, horizontal and vertical cohesion involve interpersonal processes. Organizational commitment does not. Hence one can argue that conceptually commitment is a different variable. It should also be noted that some authors (e.g., Hackman, 1976; Hare, 1976) have noted that high cohesion may be dysfunctional for the organization--as when cohesive work groups restrict their production. In any event, specific definition will facilitate the operationalization of the construct.

Recommendation No. 2: Differentiate Cohesion from Related Constructs. As noted earlier, cohesion has been used interchangeably with related constructs such as morale and esprit de corps. Consensus (or at least some agreement) needs to be reached among cohesion researchers on definitions of both cohesion and related constructs. In addition, the relationships

among the various constructs need to be specified. There are some theoretical formulations which already exist in the literature. For example, some years ago, Motowidlo and Borman (1978) proposed that morale comprises cohesion, satisfaction, and motivation. More recently, Borman, Motowidlo, Rose, and Hanser (1987) have conceptualized climate as including organizational commitment, organizational socialization, and morale. Using a framework such as this, which already has some research basis, would clarify the role of cohesion among other organizational characteristics and processes.

Recommendation No. 3: Develop a Database of Cohesion Instruments. Given the difficulty of locating cohesion measures, procedures need to be developed for assembling and maintaining a collection of such measures. As an example, the Army Research Institute (ARI) has a copy of every instrument assigned a PT ("psychological test") number by ARI. Reports relating to those instrument are supposedly available from the Defense Technical Information Center (DTIC). However, retrieving these instruments and the relevant reports is not an easy task if one does not know the dates, authors, or report titles.

Accordingly, the author suggests that ARI or some other research organization set up a computer database of instruments that are relevant to cohesion and perhaps other behavioral science research areas. This database could contain the instruments themselves plus the titles of reports, articles, papers, etc. that pertain to the instruments. The database might also contain summaries of the reliability and validity data for each instrument, where and how the instrument has been used, and points of contact for information about the instrument (when appropriate). Adaptations of original instruments need to be identified as such, with the same types of information available for the adapted measures.

Recommendation No. 4: Use Psychometrically Sound Cohesion Measures. When possible, researchers should use or adapt cohesion measures that have already been developed. Measures of demonstrated reliability and validity will accelerate the conduct of one's research. Even when measures must be modified, time is often saved. In developing (or modifying) measures, sound methodological procedures need to be followed: precise definition of the cohesion construct, careful operationalization by linking the measure to the definition, pilot testing of the measure, establishing reliability and validity of the instrument, checking reading difficulty, etc. For example, climate measures sometimes contain cohesion scales. The researcher may wish to consider one of these instruments. Not only does one obtain a measure of cohesion, but one also secures data on other variables which may be of interest.

Recommendation No. 5: Delineate the Relationship of Other Variables to Cohesion. It is important to identify antecedent, consequent, and moderator variables related to cohesion and to study their interrelationships in real world settings. There have been relatively few empirical studies which attempted to link cohesion to meaningful measures of performance. Druckman and Swets (1988) noted the paucity of such data and urged that more attention be directed toward the cohesion-performance relationship.

Even if (as the anecdotal and empirical evidence suggests) cohesion and performance are found to be positively and significantly related, it cannot be assumed that cohesion enhances performance. As noted earlier in this paper, a reciprocal relationship may be involved. Hence the relationship of cohesion to factors such as training and leadership practices needs to be investigated to enhance our understanding of how cohesion and other variables cause, are caused by, and interact with each other.

Since cohesion has sometimes been dysfunctional for organizations (Seashore, 1954), it would be important to investigate those variables associated with such dysfunction. The groupthink mentality identified by Janis (1977) in his analysis of the decision-making process leading to the Bay of Pigs debacle can be attributed to a reluctance to propose alternatives that differed from what participants perceived the group as a whole wanted. The lesser cohesion may be of benefit to organizations. Dess and Origer (1987) cite studies in which high levels of disagreement within top management were related to high levels of organizational performance. The possibility exists that a curvilinear relationship may exist between cohesion and organizational effectiveness, but convincing empirical evidence of such a relationship is lacking.

Recommendation No. 6: Report Research Completely. As the author has emphasized elsewhere (Oliver, 1987b), it is essential that behavioral science research be completely reported. Complete reporting involves presenting data for all variables and for all groups: means, standard deviations, correlation coefficients, exact values and exact probability levels for statistical tests, and adequate descriptions of subjects, instruments, and procedures. Many cohesion studies have failed to report these basic data.

To ensure that research reporting is complete is the responsibility of authors, reviewers, and editors. Authors are, of course, primarily responsible. But authors are frequently so close to their data that they may need help in detecting omissions in their reporting. Thus it is important for reviewers

of conference papers, institutional reports, or journal articles to examine carefully each research report for completeness of data reporting.

CONCLUDING REMARKS

This paper discusses some conceptual and methodological problems encountered in previous research on the cohesion of real world groups. A consideration of these issues suggests future research directions. First of all, cohesion experts need to agree on a definition of cohesion. We need to achieve what Bednar and Kaul (1978) have called a "consensual definition" of the construct. Instruments with desirable psychometric properties must be used for the measurement of cohesion, for criterion measures of group performance or effectiveness, and for pertinent moderator variables such as organizational commitment and leadership practices. In particular, considerably more research effort needs to be devoted to the development of meaningful measures of group performance. The interrelationships of cohesion and other variables must be mapped out in terms of causes and effects, recognizing that doing so will require field experimentation with comparison groups. Only with rigorous research combined with rigorous research reporting can cumulative knowledge be developed to enhance organizational functioning.

References

- Bakeman, R., & Helmreich, R. (1975). Cohesiveness and performance: Covariation and causality in an undersea environment. Journal of Experimental Social Psychology, 11, 478-479.
- Bass, B. M. (1981). Stogdill's handbook of leadership (rev. ed.). New York: The Free Press.
- Bauer, R. G., Stout, R., & Holz, R. F. (1977). Measures of military attitudes. (Research Problem Review 77-1). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Bednar, R. L., & Kaul, T. J. (1978). Experiential group research: Current perspectives. In S. L. Garfield and A. E. Bergin (Eds.), Handbook of psychotherapy and behavior change: An empirical analysis. New York: Wiley.
- Bentler, P. M. (1980). Multivariate analysis with latent variables: Causal modeling. Annual Review of Psychology, 31, 419-56.
- Beyer, J. M. (1985). From the editor. Academy of Management Journal, 28, 5-8.
- Blades, J. W. (1986). Rules for leadership: Improving unit performance. Washington, DC: National Defense University Press.
- Blau, P. M. (1963). The dynamics of bureaucracy (rev. ed.). Chicago: University of Chicago Press.
- Borman, W. C., Motowidlo, S. J., Rose, S. R., & Hanser, L. M. (1987). Development of a model of soldier effectiveness. (ARI Technical Report 741). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences. (AD A191 625)
- Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. Psychological Bulletin, 56, 81-105.
- Carron, A. V. (1982). Cohesiveness of sport groups: Interpretations and considerations. Journal of Sport Psychology, 4, 123-138.
- Carron, A. V., & Chelladurai, P. (1981). The dynamics of group cohesion in sport. Journal of Sport Psychology, 3, 123-139.

- Cartwright, D. (1968). The nature of group cohesiveness. In D. Cartwright & A. Zander, Group dynamics: Research and theory (3rd ed.) (pp. 91-109). New York: Harper & Row.
- Cook, J. D., Hepworth, S. J., Wall, T. D., & Warr, P. B. (1981). The experience of work. London: Academic Press.
- Day, R. W., Jacobs, T. O., Clement, S. D., & Johns, R. H. (1979). Military unit cohesiveness. Unpublished report prepared for the Army Personnel Management Action Committee.
- Department of the Army. (1986). Dictionary of United States Army Terms. Washington, DC: Headquarters, Department of the Army.
- Dess, G. G., & Origer, N. K. (1987). Environment, structure and consensus in strategy formulation: A conceptual interpretation. Academy of Management Review, 12, 2--220.
- Deutsch, M. (1968). Field theory in social psychology. In G. Lindsay & E. Aronson (Eds.), The handbook of social Psychology (2nd ed.) (pp. 412-487). Reading, MA: Addison-Wesley.
- Devilbiss, M. C. (1987, October). Challenges in assessing military cohesion. Paper presented at the meeting of the Inter-University Seminar on Armed Forces and Society, Chicago, IL.
- Downey, R. G., Duffy, P. J., & Shiflett, S. (1975). Criterion measures of leadership and unit effectiveness in small combat units. (ARI Research Memorandum 75-9). Arlington, VA: US Army Research Institute for the Behavioral and Social Sciences.
- Druckman, D., & Swets, J. A. (Eds.) (1988). Enhancing human performance: Issues, thesis, and techniques. Washington D. C.: National Academy Press.
- English, H. B., & English, A. C. (1958). A comprehensive dictionary of psychological and psychoanalytical terms. New York: David McKay.
- Etzioni, A. (1975). A comparative analysis of complex organizations (2nd ed.). New York: The Free Press.
- Festinger, L. (1950). Informal social communication. Psychological Review, 57, 217-282.
- Goodacre, D. M. III (1951). The use of a sociometric test as a predictor of combat unit effectiveness. Sociometry, 14, 148-152.

- Goodacre, D. M. III (1953). Group characteristics of good and poor performing combat units. Sociometry, 16, 168-179.
- Gordon, M. E., Slade, L. A., & Schmitt, N. (1986). The "science of the sophomore" revisited: From conjecture to empiricism. Academy of Management Review, 11, 191-207.
- Greene, B. F., & Hall, J. A. (1984). Cumulative methods for literature reviews. Annual Review of Psychology, 35, 37-53.
- Griffith, J. (1986), August). Group cohesion in military units: Its measurement and conception. Paper presented at the meeting of the American Psychological Association, Washington, D. C.
- Griffith, J. (1987, August). Is cohesion a meaningful psychological construct for military organizations? Paper presented at the meeting of the American Psychological Association, New York, NY.
- Griffith, J. (undated). Toward a conception and measurement of military unit cohesion. Rockville, MD: Westat, Inc.
- Griffith, J., & Chopper, M. (1986). A tripartite conception and measurement of military unit cohesion. Unpublished technical paper. Washington, D.C., Department of Military Psychiatry, Walter Reed Army Institute of Research.
- Hackman, J. R. (1976). Group influences on individuals. In M. D. Dunnette (Ed.), Handbook of industrial and organizational psychology (pp. 1455-1525). Chicago: Rand McNally.
- Hare, A. P. (1976). Handbook of small group research (2nd ed.). New York: Free Press.
- Hedlund, M., & Yoest, E. (1984). Group cohesion in combat: A review. (Personnel Utilization Technical Area Working Paper 84-26). U.S. Army Research Institute for the Behavioral and Social Sciences.
- Ivancevich, J. M., Szilagyi, A. D. Jr., & Wallace, M. J. Jr. (1977). Organizational behavior and performance.
- Jackson, G. B. (1980). Methods for integrative reviews. Review of Educational Research, 50, 438-460.
- Janis, I. L. (1977). Decision making: A psychological analysis of conflict, choice and commitment. New York: Free Press.
- Keller, R. T. (1987). Predictors of the performance of project groups in R&D organizations. Academy of Management Journal, 29, 715-726.

- Light, R. J. & Pillemer, D. B. (1984). Summing up: The science of reviewing research. Cambridge, MA: Harvard University Press.
- Lott, A. J., & Lott, B. E. (1965). Group cohesiveness as interpersonal attraction: A review of relationships with antecedent and consequent variables. Psychological Bulletin, 64, 259-309.
- Mikalachki, A. (1969). Group cohesion reconsidered. London, Ontario: School of Business Administration, University of Western Ontario.
- Moos, R. H. (1986). Military Environment Inventory manual. Palo Alto, CA: Consulting Psychologists Press.
- Motowidlo, S. J., & Borman, W. C. (1978). Relationships between military morale, motivation, satisfaction, and unit effectiveness. Journal of Applied Psychology, 63, 47-52.
- Nelson, P. D., & Berry, N. H. (1968). Cohesion in Marine recruit platoons. (Report No. 66-26). Washington, D.C.: Navy Medical Neuropsychiatric Unit, Bureau of Medicine and Surgery, Department of Navy.
- Nieva, V. F., Fleishman, E. A., & Rieck, A. & Strasel, H. C. (1985). Team dimensions: Their identity, their measurement, and their relationships. (Research Note 85-12). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences. (AD A149 662)
- Nunnally, J. C. (1978). Psychometric theory (2nd ed.). New York: McGraw-Hill.
- Oliver, L. W. (1987a). The relationship of group cohesion to group performance: A research integration attempt. (ARI Technical Report 712). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences. (AD A177 807)
- Oliver, L. W. (1987b). Research integration for psychologists: An overview of approaches. Journal of Applied Social Psychology, 17, 860-874.
- Oliver, L. W., & Spokane, A. R. (1983). Research integration: Approaches, problems, and recommendations for research. Journal of counseling Psychology, 30, 252-257.
- Olson, D. M., & Borman, W. C. (1987). Development and field tests of the Army Work Environment Questionnaire. (ARI Technical Report 737). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences. (AD A182 078)

- Orwin, R. G., & Cordray, D. S. (1985). Effects of deficient reporting on meta-analysis: A conceptual framework and reanalysis. Psychological Bulletin, 97, 134-147.
- Piper, W. E., Marrache, M., Lacroix, R., Richardsen, A. M., & Jones, B. D. (1983). Cohesion as a basic bond in groups. Human Relations, 36, 93-108.
- Price, J. L., & Mueller, C. W. (1986). Handbook of organizational measurement. Marshfield, MA: Pitman.
- Schneider, B. (1985). Organizational behavior. Annual Review of Psychology, 36, 573-611.
- Schneider, B., & Reichers, A. E. (1983). On the etiology of climates. Personnel Psychology, 36, 19-39.
- Schriesheim, J. F. (1980). The social context of leader-subordinate relations: An investigation of the effects of group cohesiveness. Journal of Applied Psychology, 65, 183-194.
- Seashore, S. E. (1954). Group cohesiveness in the industrial work group. Ann Arbor, MI: Institute for Social Research.
- Schein, E.H. (1985). Organizational culture and leadership. San Francisco: Jossey-Bass.
- Siebold, G. L. (1987, April). Bonding in Army combat units. Paper presented at the meeting of the Southern Sociological Society, Atlanta, GA.
- Siebold, G. L. (1987, August). Conceptualization and definitions of military unit cohesiveness. Paper presented at the meeting of the American Psychological Association, New York, NY.
- Siebold, G. L., & Kelley, D. (1987, May). Cohesion as an indicator of command climate. Paper presented at the Third Annual Leadership Research Conference, Fort Leavenworth, KS.
- Taylor, J. C., & Bowers, D.G. (1972). Survey of organizations: A machine scored standardized questionnaire instrument. Ann Arbor, MI: Institute for Social Research, University of Michigan.
- Zander, A. (1979). The psychology of group processes. Annual Review of Psychology, 30, 417-451.